

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte MARIA RONAY

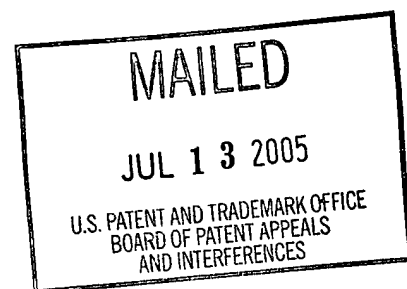
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Appeal No. 2005-1518  
Application No. 09/577,347

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ON BRIEF

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Before CAROFF, GARRIS, and WARREN, Administrative Patent Judges.  
CAROFF, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 13-36. Claim 1, the only other claim remaining in appellant's application, stands withdrawn from consideration as being directed to a non-elected invention and, therefore, is not before us.

The claims on appeal are directed to methods for polishing either a silicon dioxide surface in contact with silicon nitride, or a metal surface in contact with one or more of silicon dioxide, silicon nitride or silicon oxynitride.

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These methods are more particularly defined by independent claims 13 and 18, respectively, as follows:

13. A method for polishing a silicon dioxide surface in contact with a silicon nitride which comprises providing on the silicon dioxide surface a slurry comprising abrasive particles and an anionic polyelectrolyte in an amount sufficient to increase the polishing rate ratio of the silicon dioxide to the silicon nitride and contact said surface with a polishing pad.

18. A method for polishing a metal surface which is in contact with at least one member elected from the group consisting of silicon dioxide, silicon nitride and silicon oxynitride which method comprises providing on the metal surface a slurry comprising abrasive particles and a cationic polyelectrolyte in an amount sufficient to increase the polishing rate ratio of the metal to said member and contacting said surface with a polishing pad.

The prior art references relied upon by the examiner are:

Admitted Prior Art (APA) on pages 1-3 of appellant's specification.

Tseng	5,801,082	Sep. 1, 1998
Booth	5,814,236	Sep. 29, 1998
Ronay	5,876,490	Mar. 2, 1999

The following three rejections are before us for review:

1. Claims 13-36 stand rejected under 35 U.S.C. § 103(a) for obviousness in view of APA taken with Ronay.

2. Claims 13-17, 22-27, and 30-36 stand rejected under 35 U.S.C. § 103(a) for obviousness in view of Tseng taken with Ronay.

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3. Claims 18-21 and 28-29 stand rejected under 35 U.S.C. § 103(a) for obviousness in view of Booth taken with Ronay.

Based upon the record before us, we find that the examiner has failed to establish a prima facie case of obviousness with respect to any of the rejections before us. Accordingly, we reverse each of the rejections on appeal.

The primary references establish that it is conventional to chemically/mechanically polish both silicon dioxide surfaces in contact with silicon nitride (APA, Tseng), and metal surfaces in contact with silicon dioxide, silicon nitride and/or silicon oxynitride (APA, Booth). However, none of the primary references teaches or suggests polishing slurries which contain abrasive particles and an anionic or cationic polyelectrolyte as defined in appellant's claims.

The key reference is Ronay which does disclose use of slurries containing abrasive particles and a polyelectrolyte for polishing silicon dioxide surfaces or metal surfaces to planarize those surfaces.

As we see it, the examiner's position is predicated on the supposition that following the teachings of Ronay would necessarily lead to an increase in the polishing rate ratio,

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viz., enhance selective polishing with respect to the particular substrates to which appellant's claims are directed.

We find the examiner's position to be unpersuasive of obviousness.

The Ronay reference does not address the problem to which appellant's claims are directed - that is, to increase the polishing rate ratio with respect to the particular combination of surface materials recited in instant claims 13 and 18. Moreover, as noted by appellant, the criteria for selecting a particular combination of abrasive material and polyelectrolyte as taught in the reference is different from the criteria reflected by the present claims. According to the reference, the type of polyelectrolyte chosen is based upon the ionic charge of the abrasive particles. According to the instantly claimed invention, the choice of polyelectrolyte is based upon the particular substrate materials to be polished in order to optimize the polishing rate ratio. Thus, using the criteria set forth in the Ronay reference, one might satisfy the limitations of the instant claims, but purely by chance.

In fact, for most practical purposes, Ronay teaches away from the claims. In this regard, we note that Ronay (col. 6, ll. 32-48) discloses that almost all polishing of oxide surfaces

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involves the use of silica slurries. According to the reference criteria (col. 5, ll. 43-51), polybases should be chosen to be used in conjunction with silica abrasive. But, according to the instant specification (page 5, ll. 13-17), such polybases are cationic polyelectrolytes. Thus, the Ronay criteria is contrary to the requirements of present claim 13.

We reach a similar finding with regard to the polishing of metal surfaces. That is, Ronay (col. 6, l. 61 - col. 7, l. 10) exemplifies the typical use of alumina abrasive in this context, and suggests that polyacids should be used with alumina; such polyacids being anionic polyelectrolytes according to the instant specification. Thus, what Ronay suggests is contrary to present claim 18.

Even with regard to use of relatively neutral abrasives, such as zirconia or ceria, Ronay (col. 5, ll. 48-51) suggests that any one of three types of polyelectrolytes may be chosen, with no indication as to which of the three would be preferable in the substrate environments delineated in claims 13 and 18.

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For the foregoing reasons, the decision of the examiner is reversed.


REVERSED

MARC L. CAROFF

MARC L. CAROFF  
Administrative Patent Judge

BRADLEY R. GARRIS

BRADLEY R. GARRIS  
Administrative Patent Judge

  
CHARLES F. WARREN

CHARLES F. WARREN  
Administrative Patent Judge

BOARD OF PATENT

APPEALS AND

## INTERFERENCES

MLC/hh

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